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Cost and Management

THE SOCIETY OF INDUSTRIAL & COST ACCOUNTANTS OF CANADA
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Editorial Comment

ESTATE TAX BILL

Benjamin Franklin (1706-1790) wrote to Jean Baptiste Le Roy: "but in this world, nothing can be said to be certain, except death and taxes". That certainty is doubly assured when death and taxes meet in the imposition of death duties on the occasion of a property transfer caused by a person's death. The draftsmen of the new bill, which is coming up for consideration before the next Parliament, claim that the new Act will clarify and simplify death duties in contrast to the rather cumbersome construction of the present Dominion Succession Duty Act.

Succession duties have a long and varied history. In Canada, where capital gains are not subject to income tax, succession duties (or, in future, the estate tax) claim the public's share in the wealth left by the deceased owner, regardless of whether the estate consists of capital or accumulated income which will have already been taxed at the time of its acquisition.

Under the present Dominion Succession Duty Act, estates of less than $50,000 are duty free; the new Act exempts the first $60,000 of a married man's estate and this exemption is increased by $10,000 for each child under 21, or dependent for other cause on the deceased. These quoted exemptions appear relatively generous, but it is surprising how fast the exemption limit is reached if life insurance proceeds and gifts made during the last three years of life of the deceased are added to the actual values left for taxation purposes. The new bill tries to secure the taxability of life insurance proceeds even further.

One could be tempted to ask what interest does the industrial accountant have in the Estate Tax Bill (Bill 248)? Succession duties are predominantly the interest of lawyers and public accountants, whose services will be sought in the planning of estates wherever and whenever the amount involved warrants such precaution.

The industrial accountant is interested in succession duties, particularly in closely held corporations where the imposition of these duties may require the sale of part or all of the holdings of the deceased in the company. He will also be interested in the valuation of a closely held corporation's shares for succession duty purposes. He may be concerned to prevent any detrimental effect on a corporation which could arise from a majority holder's demise, by proper preventive measures, i.e., estate planning, insurance on the chief shareholders' lives, etc.

In this connection, the Special Rules Relating to Value (Clauses 53 and 54 of

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the Bill) require some consideration. The new section 53 states that the general rule that

> *"the value of any securities that are listed on a stock exchange, or if not listed, on which a price or quotation is obtainable from a recognized financial journal or financial report, or from registered broker, shall be deemed to be the closing price or quotation on the day of death"*

does not apply in determining the value of any security which immediately prior to his death was controlled by the deceased or by him and one or more persons connected with him by blood relationship, marriage or adoption. Clause 54 creates the legal presumption that, in these cases, the deceased owned majority shares. This clause would even apply where the deceased owned preferred shares and his children or other relations owned the common shares of the company. If these clauses should become law as now drafted, the commentaries published so far expect some difficulties in valuing such a deceased's estate and expect, therefore, some effect on estate planning.

Succession duties are another field where multiplicity of taxation by various taxing authorities (Federal government, Ontario and Quebec provincial governments) creates some hardship through duplication of assessment procedure and incongruity of rates and rules. Accountants should not cease to strive for uniformity, simplicity and clarity in any tax act. Although the industrial accountant will have only an indirect interest in the new Estate Tax Bill, his status will be enhanced if he acquires a general knowledge of the subject and so can decide when and where to seek the advice of lawyer and public accountant in solving relevant problems affecting his company or its owners.

PERSONALS

N. W. HEMBRUFF, of the Toronto Chapter, has been appointed Assistant General Manager of Triangle Conduit & Cable (Canada) Limited. Mr. Hembruff was formerly Assistant Secretary of the Company.

F. J. COOKE, C.P.A. has been appointed Controller of Studebaker-Packard of Canada Ltd. Mr. Cooke is a member of the Hamilton Chapter.

W. G. STEPHEN, R.I.A., has been admitted into membership in the Institute of Chartered Accountants of Alberta. Mr. Stephen is Treasurer of the Calgary Chapter of S.I.C.A.

W. R. LEAL, the Chairman of the London Chapter, was recently elected Secretary-Treasurer of his company, Eaton Automotive Products Limited.

Growing pains?

Every firm goes through a period of growing pains. Swelling volume of work, new commitments and changes in policy become too much for staff and equipment. This is the time to find a means of simplifying routine, of preparing statements and accounts speedily, and of reducing office costs. The Olivetti Audit 302, featuring real simplicity of operation, speed and versatility, can do much to ease the growing pains of any business and smooth its forward path into the future.

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PRODUCTIVITY IN THE OFFICE*

By Clifford Luxton,
Executive Assistant to the General Manager,
Wallaceburg Brass Limited, Wallaceburg, Ontario.

A disconcerting fact in today's office picture is the revelation that the standard of employee efficiency in most offices is only 60 to 65%. In 1958's less buoyant economy, more information at lower cost will be the keynote with office costs a prime target. In this article, the author recommends the adoption of work standards and work measurement in the office among other effective means for increasing office output.

ECONOMIC forecasts for the year ahead vary widely. Nobody has a definite answer. Predictions range all the way from hopefully optimistic to frankly pessimistic. You can take your choice as to what the next few months will bring —a further boom, a recession, a plateau, a poor beginning for '58 with a good latter half—and find some prediction that will back you up. The majority of the forecasts, however, seem to agree that the first half of 1958 at least is going to be pretty rough for business.

Assuming this is correct, I would like to make a prediction of my own. 1958 is going to be a tough year for most people in responsible positions in the field of office management. They are going to be caught in a two-way squeeze—more information at lower cost. This is not a new problem, but one which may be greatly intensified by conditions this year.

In a booming economy, with rising sales and increasing profits, the costs of operating a business do not receive nearly as much detailed attention from management as they will if sales and profits start to fall. Here's where the squeeze will come in.

On one hand will be the increasing demand for information, data, and reports as increased stress is placed on budgetary control, cost reduction, profitability of sales, operating efficiency and other factors which can lead to reduced costs and increased profits.

On the other hand is the fact that the office is an overhead cost. It is a prime target for the cost reduction program—overhead must be cut. You can't add staff to get out the additional information required. In fact, you may even have to reduce staff.

* Address to the Society of Industrial and Cost Accountants, Kent County Chapter, in Chatham, January 23, 1958.

Mr. Luxton joined Wallaceburg Brass Limited last summer as executive assistant to the general manager. His business background includes four years with Charles E. Frosst & Co. Ltd. and five years as management consultant in the Montreal office of J. D. Woods and Gordon Limited. Mr. Luxton graduated from McGill University in 1948 as a Bachelor of Commerce.

There is the problem. What's the answer? The answer, I think, is contained in the following statements:

The standard of efficiency of the employees in most offices is appallingly low—around 60 to 65%. Few office workers are earning their salaries and most offices are at least 30% overstaffed even with present methods, just because the employees are not working as hard as they should be. The standard, or 100% efficiency, is not some impossible speed of operation set by some so-called efficiency expert, but is actually a very easy pace which any person can maintain all day without trouble. Allowances are included for rest, errors, interruptions, slow down due to fatigue, and so on. It is a normal work pace based on the same methods as those used in setting standards for any factory where the operators normally earn a 25 to 40% bonus.

The standard of efficiency of methods and procedures in most offices is also very low, a most liberal estimate being about 75%, with a good many being in the range of 50%. Poor methods, duplication, unused information, and many other factors contribute to this inefficiency.

The conclusion—most offices have a combined employee-methods efficiency of perhaps 45 to 50%. This leaves a fair amount of room for improvement, and makes the answer to the problem fairly obvious. Improve the efficiency of your office.

THE SUPERVISORY FUNCTION

Now that we know the answer, how do we go about making the office more efficient? Perhaps we can decide on the first step by asking a few more questions . . .

How many office managers and supervisors are performing the functions that their titles imply—managing and supervising? How many are so loaded down with detail and routine work that they have no time to do anything in the way of organizing, planning, methods and procedures studies, etc?

The main function of a supervisor seems to be completely misunderstood in most offices. We find the average supervisor is appointed to his or her position with little regard for supervisory ability. It is usual for the average first-line supervisor to be appointed because he has been there the longest, or is the best worker in his particular section. Thus, the supervisor is the expert, and while he is probably responsible for training new members of the staff, he finds it such a slow process that he does all the difficult work himself because this is quicker than explaining to a subordinate exactly what is required.

Moreover the supervisor often does all the work requiring great care, neatness, or attention to detail because he does not trust his inexperienced subordinates with this special work.

Higher up, we find the office manager following the same course, reluctant to delegate detail work which he considers too responsible for his subordinates, or which would take too long to explain.

The upshot of all this is that they are probably working harder and doing more detail work than any of their subordinates. They are probably more than fully occupied and often have to work late to keep up to date.

The final result is that the whole chain of supervision in the office is busy on

routine work, too busy to supervise adequately and above all, far too busy to pay any attention to one of the most important phases of supervision, a complete study of the efficiency of their departments and the means by which it may be improved.

The first step then to increased office efficiency is to take a good look at, and some constructive action in, the fields of managing and supervising.

Examine your own job critically. Are you delegating work so that most of your time is left free for more important functions? Are your supervisors doing their jobs effectively?

An organized look at this problem will go a long way towards solving it. Prepare a daily time sheet showing the jobs you worked on and the time you spent on them and have your supervisors do the same thing. Review these time sheets, examining each function which has been performed, and see if it can't be done by one of your staff. Follow this up to be sure that the work has been properly delegated and that the employee has been properly trained in the task. This comparatively simple step, while it may slow down operations for a short time, will very soon result in improved operations through more time being spent on the supervisory function.

This should be followed up by a supervisory training program. Very few of us are good supervisors by nature. We have to learn the art. Plan and carry out a supervisory training program both in your office and through various courses which are given by a number of schools and business associations here and in the United States. This is a fairly long-term project, and in some instances may be quite expensive, but should return excellent profits through increased efficiency in the office.

Why I am stressing the supervising phase of office management so strongly is that it vitally affects the other steps in achieving efficient office organization. Very little improvement can be made without the full-time participation of the supervisory staff in planning, training, selling, and controlling any new efficiency programs which may be put into effect.

A FAIR DAY'S WORK FOR A FAIR DAY'S PAY

I mentioned previously that the average office worker was about 60 to 65% efficient. Wasted time is responsible for a good deal of inefficiency. In most cases it is the accumulation of a series of small time losses—too much talking, too much wandering around, constant private telephone calls, too much time in the washroom before starting work in the morning, too long at coffee break, and so on.

In offices where standards have been set for clerical workers, allowances of 15 to 20% (depending on the circumstances) are made for interruptions, personal needs, and other legitimate causes of slow-down. This means that in a 7½ hour day, approximately one hour to an hour-and-a-half per day is allowed for these causes in addition to the lunch break. Yet, in spite of this, we find that 30 to 40% of the balance of the time is being wasted or another hour-and-a-half to two hours per day. It is doubtful if we can get 100% efficiency without the introduction of some sort of financial incentive, but 75 to 80% efficiency has been achieved in offices where this matter is viewed with some concern.

The next step then, is to check the discipline in your office. How much time

are the employees allowed to waste through lack of adequate supervision? In most offices, very significant savings in clerical costs are available without changing a single procedure, through better supervision and discipline.

How successful you are here, of course, depends on how successful you have been in transferring the efforts of yourself and your supervisors from detail work to supervising.

Assuming now that the supervisor has the opportunity to supervise, and the ability and training to do it properly, he still cannot do an adequate job unless he has the necessary tools and information. His main purpose now is to get the work done correctly in the shortest possible time and still retain the cooperation and enthusiasm of the worker.

Presumably if we get a fair day's work from everyone in return for a fair day's pay we would consider that the supervisor was doing a good job. But what is a fair day's work? In most offices the supervisor does not know—the only supervision possible is to walk around the office at intervals, check that everyone is working, compare their work with past output or with other operators' production, either mentally or through some form of records, and take action where work is piling up.

Appearances can be very deceiving—we've all had experience with the busy, active worker who is continually complaining about the amount of work to be done, while actually accomplishing very little. On the other hand, there is the quiet, willing workhorse you occasionally get in your office who accepts every additional burden without complaint or comment and gets it done somehow. It is a natural tendency to place additional work where there will be the least complaint—it is the pleasantest way to get rid of the problem for one thing and the fact that there are no complaints indicates, very often falsely, that this is the area with the lightest workload. The result is an uneven distribution of the work, dissatisfied employees and the possibility that you may lose your best employees.

The supervisor's job under any circumstances is not always easy and pleasant. Trying to get the employees to do more, without being able to tell them how much is expected of them, makes it even more difficult. He can reprimand them for not working, quote figures of the greater production achieved by other people at some other time or pick some quantity or time out of the air as a goal. But how can the supervisor tell who is thinking about some phase of his job and who is just daydreaming, who is talking earnestly about the work and who is discussing last night's date, who is taking a well earned rest after a period of concentrated work and who is just loafing? How effective are standards based on a guesstimate or on the way someone did the job previously? They are going to range all the way from ridiculously easy to impossible and in many cases will do more harm than good.

WORK STANDARDS AND WORK MEASUREMENTS

To make the supervisor's job effective, the next step seems to be to provide him with some tool based on reasonably scientific methods by which he can measure how much work is being done by each individual, and how much work each individual should be doing. In effect, what we need in the office is something which is widely accepted and essential in any well run factory—work standards and work measurement.

Work standards and work measurement will provide us with the following information:

— How much work should be done by each person.
— What areas are least efficient, indicating where the most supervision is required.
— What is a fair distribution of the work. We can show the grumblers that it is fairly distributed and avoid overloading the willing worker.
— Where peaks and bottlenecks will arise, thus allowing preventive action to be taken.
— The efficiency of each operator through a comparison of the work accomplished with the standard.
— A comparison of the efficiency of all the employees in the office, regardless of the type of work they are performing.
— A means of rewarding employees through bonuses or pay increases based on actual measured efficiency rather than on estimated effectiveness.
— A measure of the supervisor's effectiveness based on the overall efficiency of the employees under his control.
— A means of estimating and forecasting the staff required to handle a specific volume of work.
— A means of comparing present and proposed systems and procedures.

With all these advantages, it is difficult to understand why standards have been used so little in most offices, even in organizations which have used them for many years in their factories. Part of the reluctance to adopt standards springs from an aversion, common to all of us, to upsetting the routine and accepting new ideas. Lack of time on the part of supervision, as stressed before, is a major cause. Another factor is the feeling that office workers are of a different calibre than factory workers and can be relied upon to give their best without any form of scientific control. I think the statements quoted earlier, where average employee efficiency was stated as reaching about 60 to 65%, should dispel this feeling.

Any standards program which you may adopt will require a major change in attitude and ideas on the part of everyone in the office. It will require the acceptance and cooperation of everyone if it is to be effective. This means a very thorough indoctrination of everyone with the merits of the proposed program — complete explanations and a big selling job before any steps can be taken in the program.

The setting of standards is a technical job on which you will need advice and assistance. You are fortunate if you have in your organization an industrial engineer or standards group working in the factory. Use their services—their experience and the methods they have developed will be of invaluable assistance. If you do not have such a group, it may be advisable to call in an outside consulting firm to get the program started and someone trained to do the job.

One objection to the introduction of standards is that it is a slow and expensive process. Another is that workers object to being watched and timed by a man with a stop-watch. The use of predetermined time systems, such as B.M.T. and M.T.M., do much to eliminate these objections. Operations may be studied and standards set in a fraction of the time taken before, and in many cases it may be done without even seeing the operation.

INCENTIVES

Experience has shown that the introduction of standards and better discipline can increase the average efficiency to about 75 to 80%, an increase of one-quarter to one-third of what was being produced before. It is becoming increasingly recognized that it is difficult to raise the efficiency of an office worker over 80% without the use of penalties or bonuses, preferably monetary.

This is a pretty radical departure from our present method of rewarding office employees. But consider the effect it could have on your office costs. The installation of any worthwhile incentive plan produces efficiencies of around 125%. This is, in most cases, double what is being produced now, and 50% better than can be achieved through installing adequate supervisory and standards programs.

Incentives take many forms. In some cases the worker's salary increases in proportion to the amount her efficiency exceeds a set percentage, say 75%. In others, the staff is all paid a much higher salary than the going rate, but they must reach the desired efficiency or be replaced. Shorter work hours or a longer vacation are other incentives that have been tried. Whatever the incentive, it must be fair or it won't work. The worker must be rewarded adequately for working harder.

RESPONSIBILITY FOR THE SYSTEMS AND PROCEDURES PROGRAM

To this point, I have mainly discussed how to get greater employee efficiency without any changes in methods or procedures. Now I would like to mention one aspect of a systems and procedures program—who is going to carry it out?

Systems and procedures work, to be successful, cannot be done on an intermittent, part-time basis. It is a full-time, continuous job, and it falls squarely on the shoulders of the office manager and his supervisors. Even the services of a full-time systems and procedures engineer, which is pretty hard to justify unless you have a fairly large office, does not remove this responsibility from the supervisory staff. The successful selling, installation and control of any new procedure depends entirely on the person supervising those people it affects, no matter how well it has been planned.

Once again we are back to step number one in making your office more efficient. The office manager and the supervisors must be relieved of all detail work. Their functions are to plan, to train and explain, to see that the work flows smoothly, that work loads are equitable, that every subordinate gives a full day's work, and, finally, to tackle the problem of increasing the office efficiency—more information at less cost.

For Further Reading

DEVELOPMENTS IN OFFICE WORK MEASUREMENT. A Panel Session. A.M.A. Office Management Series #132.

A WORK STANDARDS PROGRAM FOR THE OFFICE. Panel Discussion. A.M.A. Office Management Series #133.

HOW TO ORGANIZE THE OFFICE COST REDUCTION PROGRAM, by H. M. Kaiser, A.M.A. Office Management Series #138.

PRODUCTIVITY OF THE OFFICE WORKER, by H. A. Simpson, The Cost Accountant, March 1953.

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TOPICAL

comments *by N. R. Barfoot*

LOOKING AHEAD

Retailers expect a hard fight for the customer's dollar in the first half of 1958 and more sales buoyancy in the last six months. Manufacturers will not overproduce and merchants will be cautious about inventory levels.

100 million will be spent on new rail equipment in Canada in 1958. By 1961, between 1500 and 1700 new diesel units will be required, totalling 250 million.

Unemployment insurance contributions by all parties concerned will go up. The government would like to get the fund back to a sound actuarial basis.

Friday night opening is the choice of retailer groups in Ontario. They would like some governmental assistance to support their convictions.

Two new Royal Commissions have been added. One is to investigate and formulate a broad policy on the important but difficult field of energy. The other is to make a reliable study of price spreads. It seems almost impossible to work out any policy these days without a group of experts. I suppose some day soon there will be academic courses on how to conduct a Royal investigation. Society is indeed becoming more and more complex.

Construction volume in 1958 should equal the 6.9 billion of '57. Roads alone will account for 861 million.

Hydro additions in 1958 will amount to 2.2 million h.p. This will bring the installed h.p. to well over 20 million. It is estimated that this will bring capacity up to 28% of total Canadian hydro electric power resources.

ON THE PERSONAL SIDE

A radio controlled garage door can now be operated from a button in your car. It automatically opens, lights, closes and locks overhead garage doors.

New non-slip differential available on most new cars makes traction easier on snow, ice and mud. Power is delivered to wheel hardest to turn. Conventional differentials power the wheel most easily turned, hence the ease with which cars become stranded in snow and on ice.

Four simple rules to improve your supervisory skills:

1. A planned course for increasing your knowledge.
2. Increase your skills in working with people.
3. Improve your own attitude to your company and the people around you.
4. Look after your health; rest, exercise, fresh air and moderation in all things are still important.

Octane blender on gas pumps will soon be standard equipment at your service station. Estimates are that literally millions of car owners buy better fuel than their cars can use. New pumps give choice of six blends.

Labourers and lower level white collar workers most often produce intellectually gifted children. So reads a report of the American Association for the Advancement of Science. Well, what do you think of that?

Tires may be tinted all colours of the rainbow, according to industry reports. The auto industry not only tries anything, it tries everything once.

Tips on car maintenance from car leasing companies are:

(1) Don't be sold on excessive service.
(2) Don't tune more than every 5,000 miles.
(3) Don't replace complete set of plugs; clean, adjust and replace on an individual basis.
(4) Don't be oversold on having front end aligned or wheels balanced.
(5) Lubricate and change oil every 1,500 miles.
(6) Take advantage of all free services when purchasing gas, such as checking oil, water, tires, battery.
(7) For top economy, replace car after 26,000 miles or two years, whichever is sooner.

OF GENERAL INTEREST

Office Salaries

Recent surveys on salaries by the National Office Management Association show:

- Canadian clerical workers average $51 per week.
- Highest paid job is senior bookkeeper, averaging $79 per week.
- Private secretaries average $66 per week, typists $48, payroll clerks $57, and general juniors $44. Messengers and mail clerks average $40 per week.
- Rates vary, but in Sarnia, Ontario the top is reached, with senior bookkeepers averaging $98 per week, $79 for junior bookkeepers and $78 for private secretaries.

Management problems need to be diagnosed but very often this process merely results in such glittering generalities as: "We need more sales", or "The company's problem is lack of profit". The solutions are equally fatuous: beleaguer the sales department for more sales revenue or launch yet another cost reduction drive.

The analysis may be and usually is, much more sophisticated than the above. The following points should be considered:

- For what part of the market does the company want to compete in view of its resources and the requirements of the job?
- What kind of planning must management do to provide for growth, intelligent strategy, and answers to the "what", "how much" and "when" of the product line?
- What kind of organizational structure, personnel and training are required?
- What kind of controls should management have if it is to be "fast on its feet" in adjusting to unforseen and changing circumstances?
- Does management reappraise all these functions from time to time, particularly when control information shows unusual discrepancies?

MEASURING MANAGEMENT PERFORMANCE

By George Moller,
Treasurer and Director, Robertson-Irwin Limited, Hamilton, Ontario.

The modern trends to diversification and decentralization of the enterprise have necessitated a new type of yardstick for measuring management performance—return on capital employed. The following article assesses the value of this yardstick in relation to other measurement methods.

Give me but one firm spot on which to stand, and I will move the earth!
ARCHIMEDES (287-212 B.C.)

THE DIFFICULTY in any measuring effort lies in finding the firm point from which to measure. The firm point which we have not found and need badly in our effort of measuring would be a standard generally applicable, comparatively simple, and capable of wide acceptance.

In the free enterprise world, the manager's performance will be measured by the long range profits which the enterprise, under his leadership, earns. We should not, therefore, confine our examination to one year's results, but take a broader view encompassing several years of activity.

The *Fortune Directory*[1] ranks the 500 largest industrial corporations by various characteristics[2], and amongst those by profit as per cent of:

(a) Sales
(b) Invested Capital

The return on sales is a comparatively old and well established measuring stick. We have compilations of the return on sales, one annually made by the Canadian Manufacturers Association which reports the average per cent of profit on sales after taxes of all the manufacturing companies participating in the survey. One could be tempted, therefore, to judge the success of an enterprise by comparing the

[1] Supplement to Fortune, July, 1957 "THE 500 LARGEST U.S. INDUSTRIAL CORPORATIONS, ETC."
[2] Sales, assets, net profits, invested capital, stockholders, employees.

Dr. Moller is treasurer and director of Robertson-Irwin Limited, Hamilton. A Registered Member of the Society of Industrial and Cost Accountants, he is a frequent contributor to "Cost and Management." Following studies in law and political science, he received the degree D. Juris from the University of Prague and was for some time secretary to the management of the Bohemian Union Bank. After coming to Canada in 1939, he joined the firm of George A. Touche and Company and, in 1946, received his C.A. degree.

profit expressed in per cent of sales with past performance or with the average reported for all manufacturers in the country. This would not be fully reliable, though, because it is known that the per cent return on sales varies widely from industry to industry; whereas the average return reported by the Canadian Manufacturers Association for 1956 is 5.8%, a leading grocery chain concern stated in its recent annual report that its 2.2% return on sales is considerably better than the return achieved by all its competitors. Caution is, therefore, needed in the use of this yardstick.

How about the return on investment? Investment is defined, for this purpose, as the invested capital (net worth), i.e., the shareholders' equity consisting of the shareholders' capital and the earnings retained in the business, including genuine reserves set aside for specific purposes.

This measuring stick is of the greatest importance to the shareholders of the company because it indicates to what extent the investment in one enterprise is more or less profitable than the investment in another enterprise. Again, we have to be aware of the limitations of this measuring stick. The net worth is a book figure, the difference between the total assets on the left side of the balance sheet and all the liabilities on the right side of the balance sheet. This book figure is very often completely different from the extension of the valuation of the shares of the company on the stock market. The earnings of the company are not entirely available to the shareholders as very seldom, if at all, dividends paid represent the total earnings. The shareholders have also paid differing prices for their shareholdings, depending on the time of acquisition of the shares. The same profit, therefore, represents different percentages of return on the cost of the shares to each shareholder.

There is also the question whether the profit is to be compared to the opening or closing net worth of the company. It would be more reasonable to compare the results with the opening capital invested, unless this capital has been increased by the issue of new shares during the year. The closing figure includes the profit of the year and so it is illogical to expect to earn a return on the return. Nevertheless, the profits are often expressed as a percentage of the closing net worth.

To this point, we have concerned ourselves only with the total enterprise, which, very often, is actually a holding company comprised of subsidiaries or divisions, or a combination of both.

Frequently, the divisions of one enterprise are engaged in different lines of endeavour and their results need to be compared with enterprises entirely operating in their own lines, a feature impossible to achieve by using figures from the whole company's consolidated statement.

The diversification which has become a prominent development in our economy on this continent has brought with it the creation of many self-accounting profit centres within the legal entity, the corporation. Parallel to this development, we find a decentralization of management, bringing authority and responsibility closer to the front line of the operating unit.

These trends have increased the urgent need to find a reliable tool for determining and measuring results lest the efficiency of management be impaired. It is not

surprising then that the attention of financial management has recently been focused on the problem of measuring performance of management.

With regard to the internal profit centre, the capital employed and return thereon were found to be a generally applicable yardstick for performance measurement. Capital employed is defined as the total assets used in the operations of a business. These assets consist mainly of:

Accounts Receivable and Inventories, sometimes referred to as Current Assets,

Plant and Equipment, usually referred to as Fixed or Permanent Assets.

Net Book Values are used, i.e.—

Accounts Receivable less Reserve for Bad and Doubtful Accounts,

Inventories, plus or minus Inventory Variance Accounts.

Fixed Assets, either less Accumulated Depreciation or at original cost as described hereunder.

Included in Capital Employed are minor items, e.g., Permanent and Temporary Advances, Deposits, Prepaid Insurance, Prepaid Charges, etc., but, for practical purposes, the three items, Accounts Receivable, Inventories and Fixed Assets represent substantially the Capital Employed.

Return on Capital Employed is expressed as a percentage rate obtained from the formula:

$$\frac{\text{Net Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital}}$$

When speaking about profit, we refer to profit after taxes. As the tax rate is uniformly applied, the comparison is not affected, as long as all returns are uniformly quoted after income tax.

The first part of the formula represents the margin on sales; the second part of the formula, the turnover. The rate of return is the product of the margin on sales and the turnover of the capital employed. An improvement in the rate can, therefore, be the result of either higher margins or higher turnover, or a combination of both.

There are two schools using this measuring stick. One is broadly identified as the Du Pont concern[3], and the other is the Armstrong Cork Company[4].

The main difference between their methods of developing this procedure lies in the treatment of depreciation of fixed assets. The Du Pont method uses the total original costs of the fixed assets and transfers the depreciation reserves into the liability side of the balance sheet. This determination is not always possible for the outsider because, frequently, the net book value of the fixed assets is the only one shown in the published statements.

Armstrong Cork Company uses the net book value without adjustment. The return on capital employed is easily determinable and it is submitted that this measuring stick is comparatively realistic because it shows the difference in results

[3] T. C. Davis "HOW THE DU PONT ORGANIZATION APPRAISES ITS PERFORMANCE" A.M.A. Financial Management Series No. 94, 1950.

[4] F. J. Muth "RETURN ON CAPITAL EMPLOYED — MEASURE OF MANAGEMENT" N.A.C.A. Bulletin, Sect. 1, Feb. 1954.

achieved with the use of the same capital, regardless of its origin or source. The question is simply how much could you earn with a given sum of assets at your disposal?

We shall not attempt to list here items making up the capital employed which are beyond the immediate effective control of the responsible head of the division or profit centre. He should certainly not be held responsible for decisions made before he took over, which cannot be changed in short order; for instance, if a mill had been closed down but not disposed of, his division should be relieved of the responsibility for the amount of capital invested in the assets of the closed down mill, unless or until he is permitted to revise the previous decision.

In using capital employed and the return thereon as a measuring stick for performance and/or success, we hope to be able to apply a common denominator for enterprises of any kind, but have to be aware of certain weaknesses or drawbacks inherent even in this measuring stick.

The most important is the fiction of the constant value of the dollar. We all know about the fluctuations in the purchasing power of the dollar and the long range effect creeping inflation has had on the makeup of the book values on the balance sheet. There can be no doubt that variances in depreciation policy influence the net book value of the fixed assets. Even taxation policy will have an effect on the amount of deductions from certain assets, e.g., the Reserve for Bad and Doubtful Accounts, Inventory Valuation, Life Insurance, etc.[5]

Nevertheless, we come to the conclusion that the reported asset figures are to date the only *readily* available and therefore practical basis.

Having accepted the return on capital employed as a valid measuring stick for past performance, one more step leads to budgeting on the basis of return on capital employed followed by comparing the actual result, expressed in per cent of return on capital employed, with the budget figure for this relation.

When choosing the return percentage, several comparisons are possible:

1) Comparison with all manufacturing enterprises in Canada and/or the U.S.; figures are readily ascertainable from published listings of financial statements.
2) With your own industry group; if these figures are not available in their finished form, they can be ascertained by making the calculations for those companies which you wish your enterprise to equal or better.
3) Compare your actual rate of return against your budgeted rate and establish a trend.
4) Last, but not least, the return on capital employed is readily available for comparison between intra-company units with the added advantage that the asset valuation and depreciation and tax policy is usually the same for all units of one company or concern.

When using this measuring stick, several technical problems must be solved, e.g., the problem of the costs of top management common to the various self-accounting units of a concern. These costs can be dealt with in two ways:

[5] Perry Mason "PRICE LEVEL CHANGES AND FINANCIAL STATEMENTS", American Accounting Association, 1956.

(a) The unallocated net expenses of the parent unit are apportioned on the basis of capital employed. This would change the return rate on capital employed and allocated capital invested slightly.

(b) The costs to be distributed represent a percentage of the total divisional profits. The profits are, therefore, reduced by this percentage as shown in the following example:

CORRELATION OF CAPITAL INVESTED OF PARENT COMPANY AND CAPITAL EMPLOYED BY DIVISIONS

				Profits	Return on Capital Employed	Allocated Capital Invested
OPENING BALANCES:						
Invested Capital:						
Parent Unit		100%	$8,000,000	$ 950,000*	9.5%	11.9%
Capital Employed:		*Apportioned*				
Division A	$ 5,000,000	50%	$4,000,000	$ 500,000	10.0%	12.5%
Division B	1,500,000	15%	1,200,000	200,000	13.3%	16.7%
Division C	3,000,000	30%	2,400,000	250,000	8.3%	10.4%
Division D	500,000	5%	400,000	50,000	10.0%	12.5%
Total	$10,000,000	100%	$8,000,000	$1,000,000		

* The difference of $50,000 represents the unallocated net expenses of the parent unit.

For internal comparison purposes, it is not necessary to adjust the return for the parent unit expenses; but if the divisional results are to be compared with outside companies it becomes advisable to reduce the profits by allocating the parent unit's expenses.

This example clarifies also the correlation of "Capital Invested" and "Capital Employed" in a multi-divisional company and the application of top management costs to the results of the various divisions. Other problems in this category are intra-company and intra-divisional transfers of semi-finished and finished products. Here again, the principals governing "Buy or Make" decisions should be considered and applied under the circumstances. Sometimes the median between ascertained costs of the intra-company producer and cheapest purchasing price from outsiders will be found an expedient solution.

The use of the return of capital employed concept for improving management performance becomes increasingly an accepted fact. Only recently a MONEY MANAGEMENT CONTEST arranged by the Glidden Company in Cleveland has found wide publicity.[6] It may be expected that this is just a beginning.

Any means of planning one's operations is preferable to no planning at all. The mere existence of a plan prevents pitfalls and the unchecked development of un-

[6] Wall Street Journal: "GLIDDEN RUNS A CONTEST FOR ITS EXECUTIVE TO FIND THOSE MAKING BEST USE OF MONEY" — December 3, 1957, and "Business Week": "THRIFT PAYS DIVIDENDS IN PRIZES FOR GLIDDEN DIVISION MANAGERS" — November 16, 1957.

desirable situations. President Appley of the American Management Association stated that "Managers can be grouped into two broad categories: those who are pleased with and influenced by the accomplishments of the past and those who are primarily occupied with the future."[7] Leadership belongs to those who use the past as a springboard to a richer future.

The Controllers Institute of America lists among its objectives the development of a progressive concept of controllership adequate to meet the requirements of modern business. The Institute's concept of the function of controllership contains the following two basic functions:

1. To establish, coordinate and maintain, through authorized management, an integrated plan for the control of operations. Such a plan would provide, to the extent required in the business, cost standards, expense budgets, sales forecasts, profit planning, and programs for capital investment and financing, together with the necessary procedures to effectuate the plan.
2. To measure performance against approved operating plans and standards, and to report and interpret the results of operations to all levels of management and to the owners of the business.[8]

It is within this concept that methods for measuring performance are developed, studied and applied, and yardsticks tried out. Successful long range planning requires corresponding measurement of performance.

The immense value of the implementation of the planning and measuring concept is becoming increasingly clear beyond the circle of leading industrial enterprises and their enlightened management. No doubt our program in this direction will be marked by trial and error, but we will be successful if we persist in our efforts to determine, develop and refine yardsticks for managerial performance with the aim of winning general and finally, universal acceptance!

[7] Management News, Vol. 30, No. 10, Oct. 1957. American Management Association.

[8] Developed by the Institute's Committee on Ethics and Eligibility Standards, and approved by the National Board of Directors in August, 1955.

For Further Reading

ASCERTAINMENT OF PROFIT IN BUSINESS, by J. B. Wright, The Canadian Chartered Accountant, Feb. 1958.

DIRECTORY OF GRADUATES AVAILABLE FOR EMPLOYMENT

The Eighth Annual Directory of Graduates Available for Employment During 1958 published by Delta Sigma Pi, one of the largest professional fraternities in commerce and business administration, is now available. This directory contains the photographs and complete biographical data of almost 150 selected college students majoring in commerce and business administration and representing many of the large universities throughout the country.

Most of those students included in the directory are members of June, 1958 graduating class of their respective universities; however, there are some that graduate in January and are immediately available for employment.

This Directory may be obtained free of charge by writing to The Central Office of Delta Sigma Pi, 330 South Campus Avenue, Oxford, Ohio on company letterhead.

The Economic SCENE . . .

by W. Allan Beckett

CANADIAN BUSINESS ACTIVITY IN 1957 AND THE PROSPECTS FOR 1958

End of a Boom

Canada's third post-war economic boom came to an end during 1957. While the political pundits continue to debate the timing, and responsibility, for the current recession, to the detached observer the decline has been very much a natural phenomenon. The basic cause has been the failure of aggregate demand to grow at a rate sufficient to employ all the newly-generated capacity, both physical and human.

The expansion from mid-1954 to the end of 1956 had been fed largely by a wave of business spending on fixed plant and equipment, plus substantial additions to stocks of working capital (inventories). Canadian sales of basic commodities abroad, especially to the United States, also registered a marked increase. The income thus generated became reflected in both consumer incomes and expenditures and in government receipts and spending.

Typical patterns of stress became evident in the six months or so preceding the February 1957 downturn. Among the more important of these — including those that were causally connected to the reversal — were: cost pressures, emanating from higher materials prices, wage rates and interest charges; a consequent narrowing in profit margins; the emergence of some excess capacity in basic commodity industries; uneasiness in the stock market; and a rise in working stocks relative to final sales.

Familiar elements were also evident as business activity began to slide off. Physical output turned down, with the index of industrial production falling some five per cent from March through December. Productivity — output per man-hour — also declined as business was slow to reduce employment in the face of production cut backs. Excess capacity became more apparent and more widespread. Inventories grew more burdensome despite the fact that the rate of build-up began to lessen from early in the year. Prices of basic commodities hit a peak early in 1957, while final prices rose into the fourth quarter. Interest rates reached a peak in August and the steam went out of wages early in the autumn. The underlying trend in unemployment, concealed as usual by seasonal changes, was sharply upwards during the entire year.

Demand Pressures Ease

The year 1957 may be conveniently summed up in terms of demand patterns. Consumer expenditures continued to expand, although the rise was contained in part by weakness in durable goods. Government spending also rose with the emphasis on construction, transfer payments and wage and salary increases. Conflicting elements were evident in the investment sector. Housing entered the year on a downtrend and was lower for the year as a whole, despite the recovery which

took place at mid-year. Business spending for plant, machinery and equipment rose, although the rate of growth slackened through the year. Inventory investment constituted one of the sharpest drags on activity. Although additions to stocks were positive through the first nine months, the rate declined sharply and turned toward disinvestment by the fourth quarter. The magnitude of the shift may have reached a billion dollars (from + $800 in the first quarter, to — $200 in the fourth). This change alone was sufficient to outweigh all movements in final demand and left the Gross National Product lower at the year end. ($30.5 billion as against $30.7 billion)*

Prospects for 1958

Thus Canadian business has entered 1958 on a fairly pronounced and widespread downward trend. There are two major uncertainties in the outlook for 1958: How long will the downturn last? How serious are the overall drops likely to be?

Current indications are that any general recovery is at least as far away as mid-year. (The reader is cautioned that all industries do not move up and down together and that some will turn before and some later than this suggested date). The odds for a revival during the third quarter are better than 50-50. Three factors will help to spark the initial turn — the continued recovery in housing, higher government spending (and lower government receipts) and the achievement of a more comfortable level of business inventories.

Housing is continuing its revival and with a sizeable backlog of mortgage commitments a high level of spring starts is assured. Government policy should help to sustain personal incomes through tax cuts and increased transfer payments, while government spending on goods is also likely to rise. Business has been living off inventories since last fall and may continue to do so until mid-year. When this ceases and incoming shipments must be brought up to the level of outgoing business, firmness will spread back into the industrial system. Additional helpful factors to be looked for are a moderation in price pressures and an end to the squeeze on profit margins. All these factors should assist in restoring business confidence (which is already being reflected in the stock market).

Demand in 1958

Reviewing again the main components of Gross National Expenditure, 1958 should see a continued advance in consumption, which should rise by two to three per cent and exceed $20 billion for the first time. Some weakness will be evident in the durables sector for the early months of the year, but the last half should be strong in most lines. Government spending, as already indicated, will reach a new record, and the prospects of a budget deficit should also help to sustain activity.

Two components of investment have been discussed above. Business spending for new plant and equipment will likely drop between five and ten per cent. Modernization and repair may offset some of this decline and the rise in housing and institutional building will also help. Overall, total gross domestic investment will

* This is the writer's estimate. See D.B.S. National Accounts, Fourth Quarter and Preliminary Annual, 1957, available about March 15, 1958.

decline, with the drop being most noticeable in the first six months of the year.

Exports should hold near record levels, while imports may drop by as much as ten per cent. This will lessen Canada's dependence on foreign sources for both materials and funds and will assist us to keep the domestic decline within bounds.

The net result of these conflicting tendencies will be to leave the Gross National Product for the year up slightly from 1957. ($31.5 billion as against $30.7). The period of the sharpest declines in physical activity will be from October of last year through March, coincident with the sharp inventory liquidation. The motion of general business activity should be upward through the last half of the year as the economy moves back toward its growth trend. Associated with these difficulties, Canada will experience its worst level of unemployment since pre-war. Prices are likely to achieve stability with selective strengths and weakness the product of special factors.

Such a pattern envisages a recession both longer (16 months) and more pronounced (production down 10 per cent) than 1953-54 (11 months and 6 per cent). However, there is still much basic strength in the economy that will prevent the situation from cumulating into a serious depression. Much depends on the facility with which public policy and business foresight can effect the necessary transfer of resources from the creation of capital goods into the production and effective distribution of more consumer goods.

U. OF T. GETS "ELECTRONIC BRAIN"

Announcement of a new "electronic brain" to be installed in the University of Toronto's Computation Centre has been made by Professor W. H. Watson, the Centre's director.

An International Business Machines Type 650 Magnetic Drum Data Processing Machine will replace the Ferranti Computer (FERUT) installed in 1952, and financed jointly by the National Research Council and the Defence Research Board.

Dr. Watson said that when FERUT was installed it was an exceptional machine but with the rapid advance of electronic techniques it is more costly to operate than machines now available. The new machine is known as a stored program machine which retains internally both processing instructions — called the program — and the facts and figures to be processed. With great speed and extreme accuracy, it reads, writes, makes decisions, performs arithmetic operations, sorts, collates and then summarizes the desired information in useful form.

The U. of T. machine will have several magnetic tape units which read or write at the rate of 15,000 characters per second. Each reel of magnetic tape is 2,400 feet long and can store over 5,000,000 characters. The Tape 650 can perform as many as 78,000 additions and subtractions per minute and will make decisions at the rate of 2,300 per second.

It will be ready for student and graduate instruction and research by April 30 this year.

FLOOR STOCKING— AN INVENTORY AID FOR PRODUCTION*

By Stephen Loidl, Jr.,
Assistant to the Controller, Leeds & Northrup Company, Philadelphia, Pennsylvania.

In a period of rising costs, the search for cost reducing procedures is intensified. The inventory application described below can result in substantially reduced assembly and paperwork costs in job order companies having much assembly work and can also speed up production appreciably.

A PROGRESSIVE management constantly searches for methods to improve the earnings of its company through cost reduction. In a period of rising costs, this search becomes more demanding. Some companies are in an enviable position for they can generally offset higher costs by increasing the selling prices of their products. These companies are able to obtain the maximum advantage from bona fide cost reductions. Other companies, however, are less fortunate due to the competitive nature of their business. Such companies must develop cost reduction procedures to exist.

The purpose of this paper is to describe an inventory application designed to effect manufacturing efficiencies which should result in overall product cost reductions without sacrificing product quality or prestige.

COMPANY BACKGROUND

To serve as background information for this application, a description of our company's principal products and cost procedures is given. Leeds & Northrup Company is engaged principally in the manufacture and sale of electrical instruments and automatic control systems for industrial and laboratory use. The instruments are used in many different industries to measure, indicate, record and control conditions important to the efficient operation of industrial processes or the de-

* This paper is based on techniques and procedures developed and installed by Frank Garges, Head, Inventory Control Section and Louis L. Gumbs, Head, Systems and Procedures Section of the Order Control Department of Leeds & Northrup Company.

Mr. Loidl has been assistant to the controller of Leeds & Northrup Company, Philadelphia, since March 1956 and is treasurer of the company's Canadian subsidiary, Leeds & Northrup, Canada Ltd., Toronto. Prior to 1956 he was a supervisor on the Philadelphia staff of Lybrand, Ross Bros. & Montgomery with which firm he was associated for over 18 years. A Certified Public Accountant in Pennsylvania and New Jersey, Mr. Loidl is a member of the Trenton Chapter of N.A.A., of which he is currently publications director.

velopment of new products or processes. Although the company makes a number of standard instruments for general use, most of its products are made to meet customer specifications. The completed instruments consist principally of assemblies, in a wide variety of combinations, of various parts and mechanical, electrical and electronic subassemblies. The automatic control systems are actually coordinated "teams" of instruments, control devices and measuring elements.

The manufacturing cost of our products is determined on a job order basis. Under this method we assign a job number to each customer's order and accumulate thereunder the total direct material, labour and overhead cost of the order.

Recently, a study was made by members of our order control department in an effort to (1) shorten delivery time by speeding up production, (2) reduce overall investment in inventory, and (3) reduce paperwork and other lengthy non-productive operations in the manufacturing areas. This study embraced a review of our production processes as they related to subassembly manufacture.

The study pointed out that we were making subassemblies for our instruments on separate job orders. While our business was small, this manufacturing procedure was most appropriate. Even though our subassemblies are compatible in many different instruments, it was not feasible to set up a process department to make subassemblies if such a department would be operative only on a part-time basis. However, as the business grew, it became apparent that separate subassembly process departments would contribute substantially to a reduction in manufacturing costs since subassemblies could be made much faster on the new basis. Also, it was hoped that the speed-up in production would eventually allow a reduction in the overall number of subassemblies required as a minimum inventory stock.

Concurrently, it was considered desirable to keep the paperwork of the subassembly areas at a minimum. This could be done in different ways depending upon how much information was needed by the accounting department to allow proper costing of the subassemblies and proper accounting controls to safeguard the company's investment in inventory.

It was finally agreed upon between production and accounting to treat each subassembly area as one large job in work in process. It was also decided to make available to each area sufficient parts and material to keep the production workers busy without requiring them to requisition these items from a storeroom. In other words, the plan was to create a process cost department for each subassembly area and include therein a reservoir of parts and material.

It was felt that the results expected could best be achieved by locating the necessary stores material in easily accessible locations within each area. Inasmuch as the material was initially very often stocked on the floor, the convenient term of "floor stocking" came into use and the areas stocked were then designated as "floor stock areas".

To further aid efficiency of production and to facilitate storage in the areas, specially designed consoles were built for use by the assemblers. These consoles actually are the assembly benches upon which the subassemblies are made. The special design included provision for storage of parts and material at arm's reach. Also, standard metal shelving erected adjoining the working areas was used to

provide additional storage space as a replenishment source for the material stored on the consoles.

Because the necessary production material was placed close at hand, and completed subassemblies were retained in the area until issued on a customer's order job, the assemblers were not required to prepare the usual paperwork for (1) material consumed (normally requisitioned) or (2) quantities of subassemblies completed.

On the face of it, floor stocking might appear to be a radical departure from the procedures usually advocated by control-conscious accountants. However, a more detailed explanation of the floor stocking procedure which follows will indicate that controls can be extended to it as well as to any smaller job in work in process.

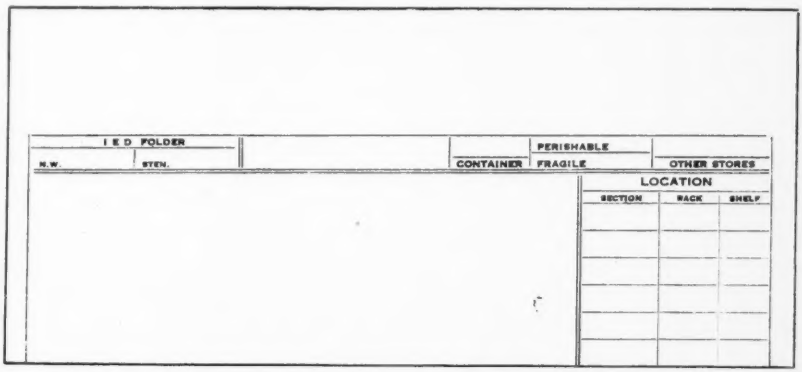
THE PRODUCTION PLAN

Parts and material purchased or manufactured specifically for subassemblies are delivered, after inspection, direct to the floor stock area, a production area rather than a storeroom. A material handler assigned to the area receives the material and subsequently distributes it as it is required for production.

The material handler is actually a storekeeper, with one important time-saving exception. His duties include a minimum of record keeping and paperwork.

It is his primary responsibility to make available adequate supplies of floor stock material in his assigned area so that there will be no interruption of work due to a material shortage. His job, therefore, requires some knowledge of the parts necessary to complete the subassemblies assembled in his area, and he must also be aware of the approximate quantities of such parts on hand at all times.

Upon receipt of the material in his area, the material handler places it on the proper shelf or floor location as shown by a location card file (see below). This file is actually what its name implies: a file of cards indicating the storage location



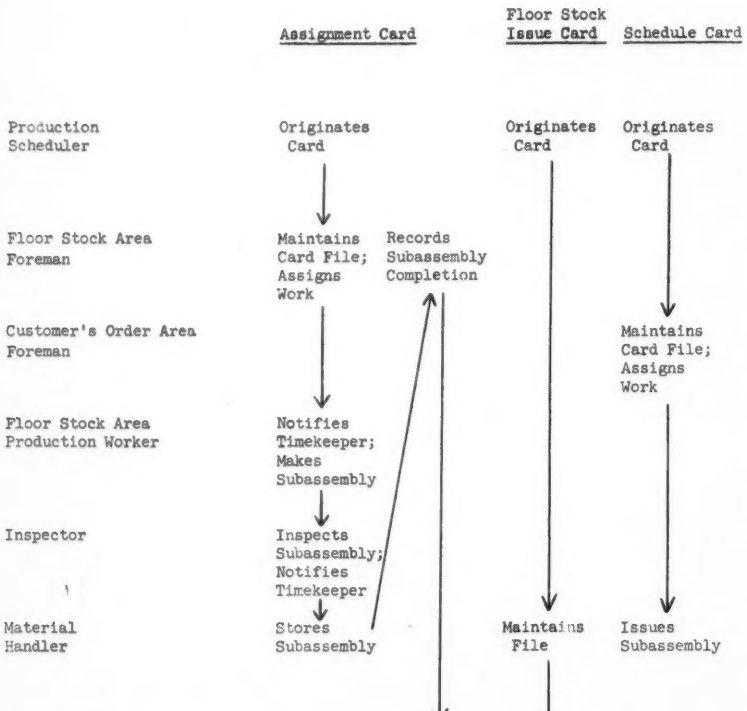
of specific parts within the particular floor stock area. As previously stated, certain small items that are used frequently are generally stocked in trays or pans on the production worker's console. Larger items are usually stored on racks or shelves

easily accessible to the worker. It is the material handler's further responsibility to see that material stocked on a worker's console is always in adequate supply so that the worker need not leave his console to replenish his needed supply.

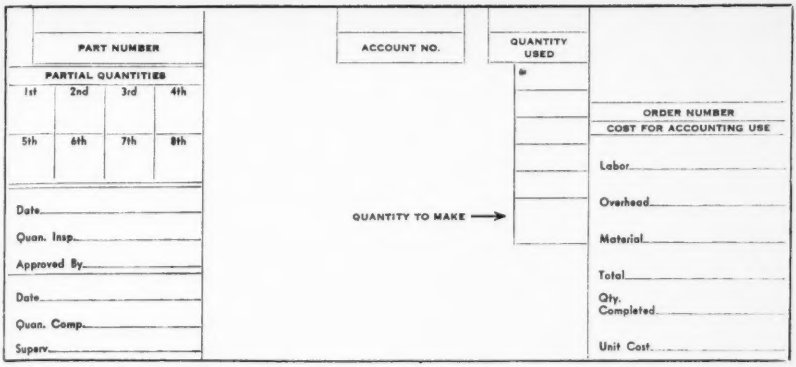
Every week the production scheduling department prepares the following correlated cards for each customer's order scheduled during that week for future production:

1. Assignment Card
2. Floor Stock Issue Card
3. Schedule Card

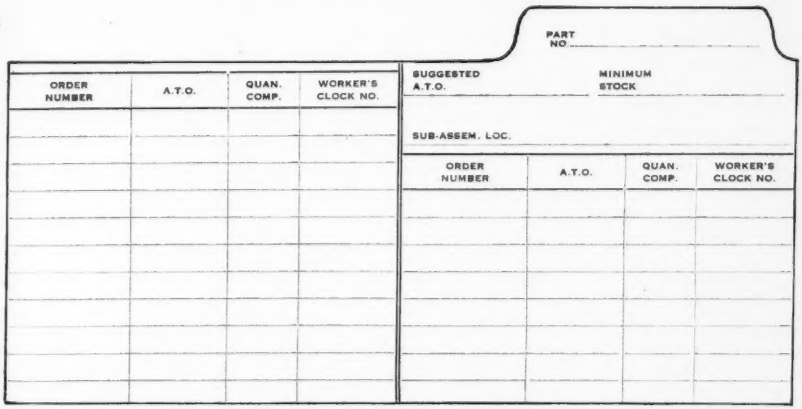
To serve as a reference in the explanation which follows, there is presented as follows, a chart depicting the flow of these cards throughout production and other areas.



The assignment cards (see following exhibit), prenumbered for control purposes, are sent to the foremen of the respective floor stock areas. These cards indicate



the quantities of the subassemblies that will be required by the adjoining customers' order areas in the next few weeks. Each foreman files the assignment cards in subassembly part number order behind index cards (see below) which show (1)



the minimum stock requirements and (2) a predetermined quantity to assemble. The predetermined quantities should preferably be established by the industrial engineering department and should be set at amounts high enough for economical manufacturing cost, yet low enough to allow frequent turnover.

Once a week the foreman reviews the required quantities shown by the respective assignment cards in his file and pulls out those cards which equal or exceed the predetermined quantity to assemble as shown by the index cards. The pulled cards, many of which may be for the same subassembly, are then summarized by subassembly on one of the cards. The summary cards are then totaled and appropriately recorded for control purposes on the proper index card. The cards from which the summary cards were prepared have no further use and are therefore destroyed. As additional work is required the summary card is given to the pro-

duction worker as his job assignment.

It is the foreman's responsibility to use good judgment as to the order in which subassemblies are assigned to the workers throughout the week. He must, at all times, be aware of the requirements of the various subassemblies by the customers' order area which his floor stock area supplies.

Each worker uses the assignment card for two things: first, as an authorization to notify the timekeeper to clock him in on that job, and second, when the job is completed, as a job ticket to accompany the completed subassemblies for inspection.

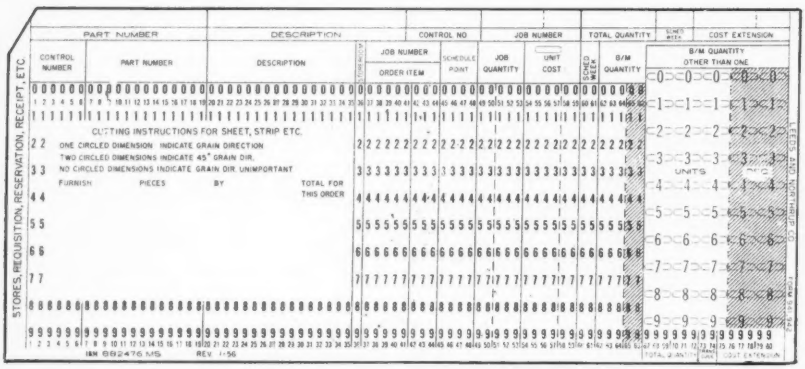
Upon completion, the subassemblies are examined by an inspector who indicates in the appropriate space on the assignment card the number of completed units approved and gives notification of completion of the lot to the timekeeper. He then sends the card (for identification purposes) and the subassemblies to the material handler for storing in the floor stock area. The completed subassemblies are then stored in the floor stock area near the customers' order area so that they may be conveniently issued on specific customer orders.

The assignment card is next given to the floor stock area foreman who enters the lot as complete on the index card in his file. If the quantity completed as indicated by the inspector differs from the quantity originally assigned to the worker, the foreman must record the difference, either over or short, on a like subassembly assignment card in his file in order that the proper number of subassemblies required in production will be made.

The foreman then initials the assignment card to indicate completion of that assignment and transmits it, with other completed cards, to the accounting dept.

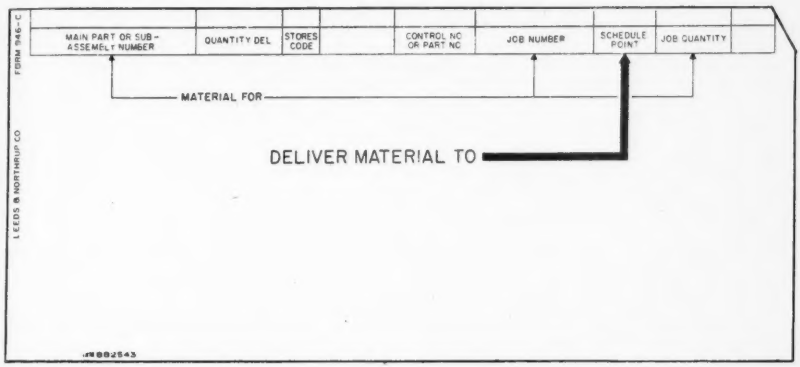
If a specific subassembly is not in stock when one or more are required by the customers' order area, it may be necessary to send a part of the total quantity shown by the assignment card to inspection before the entire lot is completed. In this case the foreman must fill out a blank card showing the quantity and description of the partial lot. This card is stamped "partial" across its face and accompanys the partial lot to inspection. The first (original) card remains with the worker until the entire lot is completed. In the meantime, the foreman enters the quantity of the partial lot on this card under "partial quantities".

The floor stock issue cards (see below), originated by the production schedul-



ing department, are sent to the material handler of the appropriate floor stock area. These cards indicate the assignment of designated quantities of subassemblies to individual customer orders which will be shipped in the next few weeks. The cards are kept in a file by the material handler in subassembly part number order until, upon receipt of a schedule card from the customers' order area foreman, he delivers the subassemblies called for by specific customer orders. At that time he removes the proper cards from his file and sends them to the accounting department as their authority to transfer the cost of the subassemblies from the floor stock job to the customer's order job.

The schedule cards (see below), originated by the production scheduling department, are sent to the foremen of the respective customers' order areas. These cards indicate the customer's orders that will be shipped in the next few weeks. The day before assignment of a specific job to a production worker, the foreman sends the appropriate cards to the adjoining floor stock area material handler who delivers the called-for subassemblies to a designated location in the customers' order area. Other material also required to assemble the customer's order is delivered to the same location by a storekeeper upon receipt from the foreman of a duplicate of the schedule card.



The schedule card is also the material handler's authority to relieve his floor stock issue card file of the cards applicable to the subassemblies delivered on the specific customer's order. Once the schedule card has served this purpose, it is no longer required and is therefore destroyed.

Periodically, throughout the month, the foremen of the floor stock areas prepare spoilage reports indicating the quantity and description of the parts scrapped and the approximate amount of labour expended in the area on the scrapped items. These reports, which are prenumbered for control, are submitted to the accounting department at the end of each month.

THE ACCOUNTING PLAN

The accounting department maintains records for each floor stock area as though it was a job in work in process. A floor stock job differs from a conven-

tional job in process in two main ways: (1) it includes a reservoir of parts and material, and (2) completed subassemblies are retained in the job rather than transferred to a storeroom.

Under a conventional job, the completion of the subassemblies usually requires a physical as well as a book transfer into a storeroom. This takes the completed subassemblies out of the work in process category for both book and statement purposes, until they are issued from the storeroom on a specific customer's order. Under floor stocking, no physical or book transfer takes place until the subassembly is issued to a customers' order area production worker for use on a specific order. Floor stocking thereby eliminates the handling of completed subassemblies into and out of the storeroom and the resultant paperwork which must follow.

All costs are accumulated on the floor stock job and the proper departmental overhead rate is applied to direct labour in the usual manner. The job is relieved of scrapped materials and the labour and overhead thereon, based upon the spoilage reports received at each month end. The job is also relieved of the standard cost of all subassemblies used by the customers' order area as indicated by the floor stock issue cards received from each area during the month. As previously indicated, these cards also form the basis of a charge to the specific customer's order job on which the subassembly was used. They then become a part of the customer's order job detail.

The assignment cards received from the floor stock area foreman enable the accounting department to determine thereon the total cost and unit cost of each lot of subassemblies produced. As a measure of efficiency and a control of the accuracy of the accumulated data, the unit cost per lot is compared with the unit cost of previously completed like lots and any significant variations are investigated.

Work in process and raw materials as carried on the books under floor stocking require adjustment for proper financial statement presentation due to recording the parts, material and completed subassemblies in work in process. A practical adjustment which is used by our company with the approval of our public accountants, is to include all floor stock jobs in "Stores Materials and Manufactured Parts" rather than all in work in process or apportioned between the two. Such an adjustment is permissible in our case inasmuch as the only work actually in process on the close of business on the statement date is the subassembly then being assembled by each worker in the area. Also, the dollar value of such uncompleted subassemblies is insignificant in relation to either of the two inventory categories.

THE CONTROL PLAN

Because material is stored in production areas, control of the individual items is not as stringent as that over material kept in a storeroom under the jurisdiction of a storekeeper. Also, it is very probable that each floor stock area contains parts and material which are used in other production areas. For these reasons, an important inventory control feature is the segregation of the floor stock areas from each other and from other production areas. For obvious reasons, borrowing of stock between areas without proper reporting should be vigorously discouraged. Of course, each floor stock area should abut the customers' order area which uses its subassemblies, to insure good production flow.

Another important control feature is the production of subassemblies in predetermined quantity lots (50, 100, etc.). This allows the benefits derived from multiple production yet provides a means by which the accounting department may measure the efficiency of operation.

Proper spoilage or scrap reports also provide a method for controlling efficiency of operation as well as a basis for removing from inventory the cost of spoiled or scrapped items.

Periodic physical inventories taken by the production workers under the guidance of the accounting department supply actual quantities and other data as of a given date for comparison with book records at that date. In addition to this control, the standard rates used to relieve the floor stock job for completed subassemblies can be checked by comparing the total material and labour usage with the totals removed from the job since the last physical inventory.

ADVANTAGES OF FLOOR STOCKING

Floor stocking, if properly administered, holds many advantages for companies manufacturing subassemblies or products which require much assembly work. The most evident advantages are summarized as follows:

(1) The assemblies may be manufactured under closer supervision and more uniformly on the floor stock basis than on an individual job basis.
(2) The unit cost of assembly may be reduced as a result of a more efficient production layout allowed by the floor stock method.
(3) The omission of paperwork generally prepared by production personnel not only provides a means for speeding up production, but also has a satisfactory effect upon employee morale.
(4) The reduction of material handling into and out of a storeroom is a significant time and personnel saver.
(5) The elimination of the numerous jobs in work in process for subassembly orders reduces the accounting department's work load.

Floor stocking, of course, is not a panacea for all assembly problems. However, it is an inventory application for job order companies having a substantial amount of assembly work which can prove helpful in reducing assembly and paperwork costs.

For Further Reading

SIX STEPS TO BETTER INVENTORY MANAGEMENT, by H. F. Dickie, Factory Management and Maintenance, Aug. 1953.

INVENTORY MANAGEMENT, STRATEGIC, TACTICAL, TECHNICAL, by D. W. Moffett, Factory Management and Maintenance, Dec. 1956.

BETTER PHYSICAL INVENTORY CONTROL, by Paul E. Lynch, The Internal Auditor, Sept. 1956.

Nothing has such power to broaden the mind as the ability to investigate systematically and truly all that comes under thy observation in life.

MARCUS AURELIUS *(Meditations)*

Profit Pointers . . .

ROTATING BANK ACCOUNTS

Hundreds of thousands of man hours spent by American industry in preparing monthly bank reconciliations can be saved if the suggestions made by Charles J. Gansloser in the L.R.B. & M. Journal (April-June, 1957) are followed. In his article "The Rotating Bank Account" the author points out that this saving could be accomplished by opening a new bank account each month through the transfer of the book balance of the old account. Both accounts, of course, would be in the same bank and provision would be made for the automatic opening of these monthly accounts.

The outstanding cheques and deposits in transit in the closed account should clear rapidly and the bank statement would soon reveal a zero balance, probably in two or three months. The author believes that a blanket authorization by the Board of Directors of a company would probably meet the bank's requirements for opening and closing monthly accounts. An informal survey of several banks revealed an active interest in such a plan. Indeed, some of the banks cited cases where a few of their customers already use such a system or a variation of it.

In implementing such a system it would be necessary to definitely identify the cheques for each month either by colours or by prominently printed code numbers so that the cancelled cheques can be quickly related to their respective accounts. The use of this rotating bank account procedure would require no different accounts in the general ledger. The month-end balance in the cash account, which represents the amount to be transferred to the new account, would require only memorandum entries in the cash disbursement records. Under such a system, the author suggests, it will usually not be necessary to perform three time-consuming steps when reconciling bank statements. The omitted steps are:

1. Sorting the cancelled cheques in numerical sequence.
2. Comparing cancelled cheques against the cheque register to determine outstanding cheques.
3. Preparing a list of outstanding cheques.

This article taken from "Accounting News and Trends" by Charles L. Savage, *The New York Certified Public Accountant*, January, 1958.

COMBINE THOSE JOBS

Is your watchman just a clock puncher? Ours was until six months ago. He had ten stations to punch, and could make the whole tour in 15 minutes. Then he read for 45 minutes and started around again.

Under a new system, the night watchman continues to do his clock punching routine, but he also acts as office janitor and plant sweeper.

Formerly, we had a full-time watchman, full-time night sweeper, and a part-time office janitor. Now all this is done efficiently and without hardship by the one man.

ACCOUNTS RECEIVABLE CONTROL

The maintenance of adequate control over accounts receivable in an organization which consists of several small autonomous units is very different from the control which may be exercised in a large single-unit company. The situation requires still further attention when many of these small units deal in such things as calendars and advertising specialties which in many cases are sold to small businesses throughout the country, whose credit standing is obscure, and, in many cases, changes drastically between the time of taking the order in the spring and delivering it in the fall. The bulk of the business booked in this category is a once-per-year proposition and firms whose credit was solid in 1954, for instance, may have encountered adverse conditions which would render their credit rating in 1956 to be something less than desirable.

Our accounts receivable control pursues the following pattern:

1. A draft is sent to the customer the month following the invoice, if payment not received.
2. If the draft is not paid, a series of five collection letters is commenced exactly two weeks apart. Two weeks after the final collection letter has been sent, if no payment has been received, the bookkeeper in the small unit has instructions to send full particulars of the account to a central collection agency which is maintained in our head office. This means that all accounts which have become overdue more than 90 days are removed from the surveillance of the local unit to the head office group.
3. The head office collection group then proceeds to attempt collection of the account.
4. In order to ensure that the local unit is up-to-date at all times with its collection letter series, drafting, dispatching accounts to head office for collection, etc., a detailed review is conducted once every two months by a competent head office clerk.

We find this system works admirably, and proof of this may be seen in the fact that our bad debt experience over the past three years has been very good, when one considers the nature of the business.

CONTROL OF SPECULATIVE WORK

In the printing and lithographing industry, it is common for customers to show sufficient interest in a carton or label design that the salesman will ask for one or more sketches.

Often a request for a sketch was made directly to the art department, and the time spent at it would sometimes be overlooked. To overcome this, we made it obligatory for the sales department to request the sketch through the order department. This meant that an order would be written up and all the order documentation carried out. After many months we abandoned this system as a waste of time and effort.

For such sketches we now have salesmen deal with the art department directly, but artists must obtain a sketch order number from the production manager. A small cost binder of sketches in process is maintained and to these small cost sheets is posted the artist's time; he must account for the full day.

The sketch binder is reviewed monthly. All work which has resulted in an order is transferred to a regular order cost sheet; work which is still pending is left in the book; and speculative sketch work on orders which have not materialized is written off as sales development expenses.

PREPARING FOR THE AUDITORS*

By W. G. Reid,
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Fredericton, New Brunswick.

There is much that the client's staff can do to help the professional auditor complete his work. The following article itemizes the many ways in which this help can be given through the preparation of statements, schedules, listings, confirmations, analyses and reports.

PEOPLE have many ideas about the purpose of professional auditing. If you were to ask the average individual what function the professional auditor performs, he would probably reply—

"The preparation of income tax returns or financial statements for income tax purposes."

This view is very limited when one considers the varied services rendered by a professional auditor in the following fields—investigations for the purchase of a business, for the exposure of fraud, for the preparation of prospectus on the issue of shares to the public, assisting in establishment or improvement of internal control, costing systems, credit systems, and, of course, the statutory audit.

As business grows in size and diversification, the function of the auditor in expressing a professional opinion for the benefit of shareholders, directors, management and general public, assumes ever increasing importance. It is to this end that the auditor directs his work in performance of an audit, bearing in mind his responsibility and legal liability to the shareholders. This aspect of liability to shareholders and for the public has been clearly established in court cases dealing with all phases of auditing. The judgment in the case of "The London and General Bank Ltd.", although handed down 62 years ago in Great Britain, is a classic to this date in that it touched upon many of the essential aspects of the auditor's problems in carrying out his appointment. To quote in part from the context of the decision—

"An auditor is not bound to do more than exercise reasonable care and skill in making inquiries and investigations, that is he must not certify what he does not believe to be true and, he must take reasonable care and skill before he believes."

The main objective then in an audit is the preparation of an opinion by the

* An address delivered to the Fredericton Chapter of S.I.C.A. on November 20, 1957.

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auditor based upon his examination and the information given to him.

In its strict interpretation as applied to books of accounts, an audit is the examination of prepared financial data without further compilation by the auditor. In other words, a set of financial statements duly completed is handed to the auditor with instructions to verify its accuracy.

Auditing procedures have not changed notably, but there has perhaps been a gradual change in emphasis. While the responsibility of the auditor devolves on the expression of his opinion and is the same whether his client be the shareholders of a large corporation or a small enterprise, the means of formulating that opinion must of necessity be different.

Basically then the procedures or audit techniques used by the auditor to acquire the information necessary for formulating a professional opinion can be stated as follows:

1. Physical examination and/or count.
2. Confirmation.
3. Examination of original documents and recorded data.
4. Recomputation.
5. Retracing bookkeeping procedures.
6. Scanning.
7. Direct inquiry.
8. Examination of subsidiary records.
9. Correlation with related information.

NINE WAYS TO ASSIST THE AUDITOR

In order, then, to facilitate the actual work of the auditor, the client's staff can contribute much in the way of statements, schedules, listings, confirmations, analyses and reports.

Dealing for a moment with each of the aforementioned audit techniques and the preparedness of the client's staff:

1. Physical examination and/or count:

Using cash as an example—if the auditor was unable to be present to count the cash at the year end, the cash records should be available to the date of his count in order that he may reconcile his count with the amount on hand at the year end.

2. Confirmation:

The most widely used verification practice is that of confirmation which consists of obtaining a written statement from someone outside the enterprise on a fact which that person is qualified to affirm. In respect to accounts receivable, the auditor can readily determine the extent to which this is necessary by referring to listings, prepared by the client's staff, and analyses of the effectiveness of internal control reported by a responsible person on the client's staff or in cooperation with a member of the auditor's staff. Direct confirmation is also used to verify various other facts, such as accounts payable, bank balances, contingencies, inventories stored in widely separated points and contract obligations.

3. Examination of original documents:

In this method, the client's staff can assist greatly by having schedules available,

detailing, say, the additions to fixed assets with the original invoice records attached. Included in this idea would be that of a schedule of insurance in force with the policies or certified copies attached or readily available.

4. Recomputation:

This is a simple aspect of the audit, complete in itself. Schedules detailing the basis of allocation in respect to prepared expenses, depreciation, provision for doubtful accounts, etc. can be prepared in advance by the staff and handed to the auditor for his accuracy check.

5. Retracing of bookkeeping procedures:

The extent to which this is done will depend a great deal upon the effectiveness of the internal control in any office. Certain posting checks must be made to validate procedures and trial balances, prepared in advance, will facilitate the work in respect to the general ledger and subsidiary ledgers.

6. Scanning:

While perhaps the most indefinite audit technique commonly employed, it is nevertheless extremely valuable. An experienced auditor relies heavily upon the comparability of data and will investigate an item or amount which is out of proportion in respect to previous statements, or what he has determined through other channels. Here the advance preparation of analysis, detailing the content of accounts which have varied appreciably from prior periods, will contribute much to the problem faced by the auditor.

7. Direct inquiry:

While basically a matter of question and answer, this is of considerable value in obtaining reliable evidence. The client's staff should fully understand the questions being asked before answering, as accurate answers are important and often provide detail about matters which might otherwise be obscure.

8. Examination of subsidiary records:

The extent to which an auditor will rely upon subsidiary records is determined primarily by the degree of effectiveness of internal control. Here, the staff can have listings available supporting the controlling records, and evidence of previous reconciliations at regular intervals during the period under review.

9. Correlation with related information:

In the double entry system of accounting, there is a tendency for items to relate to one another, not only individually but in total. As for example, a verification of notes payable will also furnish the data for the reconciling of the total interest expense for the period with the notes known to be outstanding during the period. Here the client's staff can prepare this reconciliation in advance of the audit and at the same time furnish the necessary information for attachment to the federal income tax return in respect to interest payments accorded as expense.

The auditing techniques outlined are not in themselves all-inclusive. There is no doubt wide scope for discussion as to what constitutes generally accepted auditing standards.

There can be no laid-down rules as to the minimum or maximum amount of detailed checking which must be done. Even if a system of internal control were judged to be airtight, it would still be difficult to justify doing no checking at all.

The criterion, I believe, is that amount of checking necessary to arrive at an informed opinion, keeping in mind that there is no substitute for good common sense in determining the course the procedures should follow.

ASSISTING WITH THE INCOME TAX RETURN

Let us turn for a moment to the requirements of the income tax act and the information accompanying it. Assuming that the financial statements are prepared by the auditor, the following can be prepared in advance by the client's staff.

1. Continuity of fixed assets and computation of capital cost allowances claimed.
2. Schedule of dividends received.
3. Continuity of all reserves, including provision for doubtful accounts, estimated or undetermined liabilities, unearned income or any other purpose.
4. Schedule of charitable donations with receipts.
5. Schedules detailing, where applicable, payments for interest
   rents
   royalties
   or similar payments.
6. Schedule of parent, subsidiary, affiliated or associated companies, including non-resident companies, detailing the address of each and its relationship to the company.
7. Written reports outlining any transactions with shareholders other than those arising in the course of the company's ordinary business.
8. Analysis of sales and remuneration paid to employees by province where such is applicable.

COOPERATION AN ASSET

The culmination of all the work performed in connection with an audit is the expression of a professional opinion on—

(a) Whether the balance sheet presents a true and correct view of the affairs of the company and

(b) Whether they are as shown by the books of the company,

and it is to this end that the independent auditor directs his inquiries.

In giving judgment in the case of Armitage, Brewer & Knott the learned judge said in part—

"It is the duty of auditors to be suspicious, that is what they are for."

However, the auditor should approach his duties in a spirit of cooperation, and not with the "policeman" approach regarding all and sundry as potential law breakers.

The realization that an auditor is only seeking to acquire information and explanations with which he may form an opinion should be the governing factor in preparing for an audit.

This, coupled with a spirit of cooperation and material readiness, will do much to facilitate completion of the work.

For Further Reading

HOW CLIENT AND AUDITOR CAN HELP EACH OTHER GET EFFECTIVE AUDITS AT LEAST COST, by T. B. Noble, The Journal of Accountancy, June 1950.

Books in Review . . .

WORK SAMPLING, Second Edition

By Ralph M. Barnes, John Wiley & Sons, Inc., New York, N.Y. 1957. pp. 283. $7.95.

Reviewed by E. F. Stevens, A.C.A., A.R.Ae.S., F.R.Ec.S.

Here is theory as well presented as any I have recently read. Here also is theory supported by papers on practical studies — a new and valuable slant.

Mr. Barnes submits his case for work sampling as a management tool. He convincingly demonstrates how, by the application of sampling principles, reliable measurement of work effort, asset utilization and efficiency can be obtained. Then, to help dispel any doubts in the minds of his readers, he devotes several supplementary chapters to papers by eminent exponents of the science on its application in various areas of industrial and institutional activity.

But for whom was the book written?

To read intelligently, understand and interpret this work, the reader must possess a somewhat more than broad education in business mathematics. Familiarity with the fundamentals of statistical theories, a yen for mathematical formulae, some knowledge of alignment charts and their construction and prior acquaintance with random numbers are a requisite for the comfortable digest of this presentation.

Even with this knowledge, what yardstick does the reader have to measure the truth of claims made for this technique? The author is obviously well versed in the accepted principles of work study and performance in that science. Even though the results can be closely correlated with those obtained through work study methods, the less experienced of his readers might not easily accept the principle of their accuracy. If either or both should be unreliable, then we benefit nothing.

This then is a book which should be of considerable interest to the professional industrial engineer, the time study man with a statistical bent and the student of work sampling.

The author sold me through the sincerity of his presentation and his obviously extensive knowledge on this and allied subjects. This is not light reading but the book presents its subject in a way that titillates the imagination and strikes a spark of desire to learn more in the curious mind. I read it twice!

COST ACCOUNTING AND CONTROL

By Cecil Gillespie, Prentice-Hall Inc., Englewood Cliffs, N.J., — 1957, pp. 896, $10.60.

(This review is based on an advance printing of the book consisting of pages 1 to 243 only, comprising the preface and the first eleven chapters out of thirty chapters listed in the Table of Contents.)

Reviewed by George Moller, D.Jur., C.A., R.I.A.

In reviewing a cost accounting text, one is tempted to ask what purpose an additional text book in this field is intended to serve and what still-existing needs could

be filled by it. A novel approach is indicated by the preface which states that special attention "is paid to reports for management and managerial use of cost accounting. In many chapters, reports to management are presented in the beginning and the cost accounting technique follows." The use of visual aids in the way of line diagrams and charts is justly emphasized throughout.

The volume is built on a discussion of three types of business, a small business, a somewhat larger business, and a large company, thus progressing from the simpler problems of the small business to the more complicated needs of the larger company, e.g., distribution cost analysis. Discussion questions on debatable points of theory are included at the end of each chapter. According to the preface, costs for various intended uses by management are emphasized in these questions.

The sequence and arrangement of the first part of the book follows conventional patterns. The use of one continuing example (adapted case method) is helpful. Another technique worth mentioning is the use of arrows in the presentation of accounts, linking corresponding entries and thus enabling the student to follow the connection between the various reproduced accounts without difficulty. The source of the entries in the various reproduced records is clearly indicated by superimposed squares and arrows with explanatory text.

Based on the advance printing of this textbook, the reviewer is inclined to consider it a good addition to the number of available instructive texts, albeit without revolutionary innovations or fascinating features. But perhaps this is desirable for a textbook primarily intended for students.

THE ECONOMICS OF INDUSTRIAL MANAGEMENT, Second Edition

By Walter Rautenstrauch and Raymond Villers, revised by Raymond Villers, Funk & Wagnalls Company, New York, N.Y. 1957. pp. 480 and Index. $7.50.

Reviewed by George Moller, D.Jur., C.A., R.I.A.

The core of the original work, published in 1949, is the break-even chart process of analysis, and its application, a development which, over the years, has received unusually wide acceptance by industrial management. This edition brings the standard work up to date in an elegant but thorough fashion. As mentioned in the preface to the second edition, the data available since 1949 confirmed "the validity of the linear relationship of the profit and loss chart as a reliable standard of measurement for the purpose of profit control". The author explores the potentialities open to management through the use of electronic computers for industrial control, now permitting the calculation of many alternatives in short order, which previously would have been impractical.

The work remains divided into three parts:

Part I — Visualizing The Business
Part II — Industrial Cost Characteristics
Part III — The Business As Part Of The National Plant

The economic flow, its pattern and measurement, financial statements and their interpretation, sales-expense relationships, are discussed in the opening chapters. Chapter V is entirely devoted to "Charts of Businesses and Industries". These charts have been brought up to date and include, in Table XX, a Study of Actual

vs. Trend-Determined Cost. This chapter gives the answer to the question how reliably trends can be determined and considered as standards by which past profits can be measured and on the basis of which future profits can be forecast in relation to anticipated sales. Two chapters on problems of investment and problems of management conclude the first part.

In Part II, the principles underlying the detailed costs of production are examined from a top managerial viewpoint, starting with the use of money, discussing depreciation, properly stressing the influence of taxation on depreciation concepts, proceeding to expense classification and allocation principles and concluding in a discussion of cost by unit of output and the relative worth of alternatives. In the last chapter of this part, the new accomplishments in operations research are described.

Part III lifts the level of observation from the individual enterprise to the "national plant" as a whole, co-ordinating production, distribution and consumption. The author defines scientific management as "a scientific integration of efforts by freely accepted co-ordination of activity". Chapter XIV is devoted to the discussion of the dollar as an economic yardstick distinguishing monetary inflation, credit inflation and discussing the consequences of inflation.

Factors concerning production and effective demand are discussed in Chapter XV which develops numerous very interesting observations clearly illustrated in chart form. The author draws conclusions from the study of total personal consumption expenditures and of a few selected consumption expenditures in relation to disposable income over a period of about twenty years, which are most interesting (pp. 414, ff.).

The last chapter is devoted to the discussion of industrial expansion. In the concluding paragraphs, newly added in the second edition, Prof. Villers stresses the relationships to which the methods presented in the book are essentially related:

1) The Cost to Sales relationship
2) The Sales to National Income relationship
3) The relationship among alternate possibilities (sub-optimization).

A casual perusal of the book could create the impression that it is extensively based on mathematical computations; it would be wrong to assume, though, that a profound knowledge of mathematics would be required to fully understand and appreciate the presentation. The reader is led through equations with comparative ease, and will find his way through the graphs and computations by merely following the steps indicated by the author. Even in cases where the formulae developed in the text, as for instance in the sales-expense relationships, resort to higher mathematics, the conclusions are easily understandable.

Although Prof. Villers stresses that methods will never provide a substitute for managerial ability, it can be truly stated that the knowledge of the methods described in the book will certainly strengthen and immensely improve the managerial skill and effort in industry. This clearly and understandably written dissertation can be unreservedly recommended to the industrial manager, the industrial accountant, the industrial engineer and, last but not least, the student of business administration and its component sciences and arts, for whom selected questions and problems pertaining to each chapter are added.